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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,334	06/04/2007	Adrian Kitai	15497NP	6597

293 7590 01/19/2011

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EXAMINER	
XAVIER, ANTONIO J	
ART UNIT	PAPER NUMBER
2629	
MAIL DATE	DELIVERY MODE
01/19/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,334	KITAI, ADRIAN	
	Examiner	Art Unit	
	ANTONIO XAVIER	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 November 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed November 11, 2010 (hereinafter "Remarks") have been fully considered but they are not persuasive.

Eliminating the need for color filters or frame-sequential color methods

On pages 9-10 of the Remarks, Applicant argues the "inventive features of the claimed invention have achieved the technical solution of eliminating the need for either color filters or frame-sequential color methods" (emphasis in original). Examiner is not persuaded.

First, in response to Applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a negative claim limitation directed to a display without color filters or frame-sequential color methods) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Second, in the interest of compact prosecution, Applicant is directed to Fig. 29 and Col. 18, lines 16-34 of Sonehara teaching a display with separate colored light sources instead of a color filter and Fig. 9 and Col. 8, lines 13-38 of Parker, teaching

separate colored light sources without the need for color frame synchronization (i.e., frame-sequential color methods).

Sonehara teaching away from using each fiber to carry only one color

On pages 10-11 of the Remarks, Applicant argues "Sonehara is clearly teaching away from using each fiber to carry only one of three colors of light" (emphasis added). Examiner is not persuaded.

Examiner notes Sonehara expressly teaches a single color fiber can be used for one of the three primary colors R, G and B. Applicant is directed to Fig. 29 and Col. 18, lines 16-34 of Sonehara teaching a display with separate colored light sources instead of a color filter.

Parker teaching light from each light emitting diode being focused onto a pre-selected region of the liquid crystal display modulator

On page 11 of the Remarks, Applicant argues "according to Parker, the light from the LEDs is mixed and combined ***before reaching the LCD***" (emphasis in original). Examiner is not persuaded.

First, in response to Applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a negative claim limitation where light from the LEDs is not mixed or combined

before reaching the LCD) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Second, in response to Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Examiner notes the claimed limitation is also disclosed by Sonehara and disclosed on page 3, lines 9-13 of the Office Action mailed May 13, 2010.

2. Applicant's remaining arguments have been fully considered but they are not persuasive. Furthermore, the common knowledge or well-known in the art statements presented in the prior office action are now taken to be admitted prior art because Applicant either **failed to traverse the Examiner's assertion of official notice** or the traversal was inadequate.

Examiner thanks Applicant for recognizing the common art and advancing the focus of the prosecution with respect to Applicant's inventive concept.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al. (U.S. Pat. No.: 5,053,765) in view of Parker et al. (U.S. Pat. No.: 6,224,216) in view of Parker et al. (U.S. Pat. No.: 6,224,216) and further in view of Nixon (U.S. Pat. No.: 5,293,437).

With respect to Claim 1, Sonehara teaches a tiled optical display, comprising:

at least one display module 10 (Figs. 1-4, 10-11 and 29) including

i) a liquid crystal display modulator (Figs. 1-4, 10-11 and 29, Abstract and Col. 4, lines 8-10 and lines 50-55 and Col. 10, lines 9-12 teach an LCD light shutter) and a light positioned to backlight the liquid crystal display modulator (Figs. 1-4, 10-11 and 29, Abstract and Col. 4, lines 8-10, Col. 9, lines 8-35 and Col. 18, lines 16-28 teach various backlight sources), the backlight including at least one each of red, green and blue (**Figs**. 1-4, 10-11 and **29**, Abstract and Col. 4, lines 8-10, Col. 9, lines 8-35 and **Col. 18, lines 16-28** teach various RGB sources including color filters and **separate light sources**) with a beam of **light from each light source being focussed onto a pre-selected region of the liquid crystal display modulator spaced from the light**

emitted by the other light sources (Figs. 1-4, 10-11 and 29, Abstract and Col. 4, line 50-Col. 5, line , Col. 9, lines 8-35 and Col. 18, lines 16-28 teach various backlight sources create preselected RGB regions), each pre-selected region of the liquid crystal display modulator including an array of optical modulation elements (Figs. 1-4, 10-11 and 29, Abstract and Col. 4, lines 8-10, Col. 9, lines 8-35 and Col. 18, lines 16-28 teach various combinations of optical fiber and light sources, including an array of optical fibers for individual RGB light sources) such that light from each beam of light passes through one set of corresponding optical modulation elements (Figs. 1-4, 10-11 and 29, Abstract and Col. 4, lines 8-10, Col. 9, lines 8-35 and Col. 18, lines 16-28), control means connected to each individual modulation element of each set of optical modulation elements for controlling a desired amount of light from each beam to pass through each individual optical modulation element of the liquid crystal modulator (Figs. 1-4, 10-11 and 29, Abstract and Col. 4, lines 8-10, Col. 9, lines 8-35 and Col. 18, lines 16-28); and

ii) a planar view plane having a pre-selected number of pixels (Figs. 1-4, 10-11 and 29, Abstract and Col. 3, line 64-Col. 4, line 10), wherein each individual optical modulation element in each pre-selected region of the liquid crystal display modulator has a first end of an optical light guide optically coupled thereto (Figs. 1-4, 10-11 and 29, Abstract and Col. 4, lines 11-55), and a second end of one optical light guide from each pre-selected region of the liquid crystal display modulator being optically coupled to one of the pre-selected number of pixels on the planar view plan, and wherein each pixel is formed by at least three optical light guides, each of whose first end is optically

coupled to each of a red, green and blue light source, respectively, mediated by at least three different pre-selected regions of the liquid crystal display modulator (Figs. 1-4, 10-11 and 29, Abstract and Col. 4, lines 11-55 and Col. 5, lines 1-28, Col. 9, lines 8-35 and Col. 18, lines 16-28).

However, Sonehara fails to expressly teach an array of light emitting diodes positioned to backlight the liquid crystal display modulator, the array of light emitting diodes including at least one each of red, green and blue wavelength emitting light emitting diodes with a beam of light from each light emitting diode being focussed onto a pre-selected region of the liquid crystal display modulator spaced from the light emitted by the other light emitting diodes, and a planar view plane having a second end of one optical light guide of the liquid crystal display modulator being optically coupled to one of the pre-selected number of pixels on the planar view plane so each pixel is optically coupled to at least a red, green and blue light emitting diode mediated by the liquid crystal display modulator (emphasis added).

Parker teaches the use of RGB LEDs as a light source for an LCD (Figs. 2-3 and 8-9, Abstract and Col. 4, lines 2-3, Col. 5, lines 8-15, Col. 6, lines 12-15 and Col. 7, line 46-Col. 8, line 56). Specifically, Parker teaches an array of light emitting diodes positioned to backlight the liquid crystal display modulator (Figs. 2-3 and 8-9, Abstract and Col. 4, lines 2-3, Col. 5, lines 8-15, Col. 6, lines 12-15 and Col. 7, line 46-Col. 8, line 56), the array of light emitting diodes including at least one each of red, green and blue wavelength emitting light emitting diodes (Figs. 2-3 and 8-9, Abstract and Col. 4, lines 2-3, Col. 5, lines 8-15, Col. 6, lines 12-15 and Col. 7, line 46-Col. 8, line 56) with a beam

of light from each light emitting diode being focussed onto a pre-selected region of the liquid crystal display modulator (Figs. 2-3 and 8-9, Abstract and Col. 4, lines 2-3, Col. 5, lines 8-15, Col. 6, lines 12-15 and Col. 7, line 46-Col. 8, line 56) spaced from the light emitted by the other light emitting diodes (Figs. 2-3 and 8-9, Abstract and Col. 4, lines 2-3, Col. 5, lines 8-15, Col. 6, lines 12-15 and Col. 7, line 46-Col. 8, line 56). It would have been obvious to one of ordinary skill in the art to replace the light source of Sonehara with an RGB LED light source as taught by Parker to obtain an improved display device including, but not limited to improved color and motion display.

Sonehara in view of Parker teach a liquid crystal display modulator with RGB light emitting diodes and optical light guides. However, Sonehara in view of Parker does not expressly teach each pixel is formed by at least three optical light guides, each of whose first end is optically coupled to each of a red, green and blue light emitting diode, respectively (Examiner notes this may be inherent to the system taught by Sonehara in view of Parker, but is providing an additional reference for clarity in the interest of compact prosecution).

Nixon teaches wherein each pixel is formed by at least three optical light guides, each of whose first end is optically coupled to each of a red, green and blue light emitting diode, respectively (Figs. 7a, 9 and 9a, Abstract and Col. 2, line 43-Col. 3, line 11, Col. 4, lines 39-48 and Col. 5, lines 24-46).

Hence, the prior art includes each element claimed, although not necessarily in a single prior art reference, with the only difference between the

claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference.

In combination, Sonehara in view of Parker performs the same function as it does separately of a liquid crystal display modulator with RGB light emitting diodes and optical light guides. Nixon performs the same function as it does separately of forming a pixel using separate fiber optics for RGB color triplets, i.e. pixels.

Therefore, one of ordinary skill in the art could have combined the elements as claimed by known methods, and in that combination, each element merely performs the same function as it does separately.

The results of the combination would have been predictable and resulted in modifying the display of Sonehara in view of Parker such that each pixel had a red, green and blue fiber optic light guide. One of ordinary skill in the art would have recognized that the results of the combination provide RGB pixels with LED light sources. Therefore, the claimed subject matter would have been obvious to a person having ordinary skill in the art at the time the invention was made.

In the interest of compact prosecution, Examiner further notes that at the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to arrange multiple LED arrays for each individual color or a single array with various colored LEDs arranged by row, column or other groupings because Applicant has not disclosed that a single backlight array including red, green and blue LEDs provides an advantage, is used for a particular purpose, or solves a

stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with multiple LED arrays for an individual color or a single array with various colored LEDs arranged by row, column or other groupings because both configurations provide a light source as needed by an LCD. Therefore, it would have been an obvious matter of design choice to change the configuration of the light source of Sonehara in view of Parker and further in view of Nixon to include a single array with various colored LEDs.

With respect to Claim 2, Sonehara in view of Parker and further in view of Nixon teaches the tiled optical display according to Claim 1, discussed above, wherein said optical light guides are optical fibers (Sonehara, Abstract and Col. 4, lines 18-20).

With respect to Claim 3, Sonehara in view of Parker and further in view of Nixon teaches the tiled optical display according to Claim 1, discussed above. However, Sonehara and Parker and further in view of Nixon fail to expressly teach wherein the at least one display module is a plurality of display modules, the planar view plane of each display module being tiled together with a planar view plane of at least one other display module (emphasis added).

Examiner takes official notice that tiled displays and modular displays are well known in the art. It would have been obvious for one of ordinary skill in the art to modify the display of Sonehara in view of Parker and further in view of Nixon to include a plurality of display modules tiled together. Furthermore, one of ordinary skill in the art

would have recognized that tiling a plurality of the display device taught by Sonehara in view of Parker and further in view of Nixon would have yielded predictable results and resulted in an improved system.

With respect to Claim 4, Sonehara in view of Parker and further in view of Nixon teaches the tiled optical display according to Claim 1, discussed above, wherein each pre-selected region of the liquid crystal display modulator having a beam of light from a light emitting diode focussed thereon includes a pre-selected number of optical fibers having their first ends optically coupled thereto (Sonehara, Fig. 29 and Col. 18, lines 16-28 and Parker, Fig. 9 and Col. 8, lines 13-23 teach multiple optical fibers connected to a pre-selected color region), the first ends of the plurality of optical fibers being arranged symmetrically with respect to the beam of light focussed onto the pre-selected region of the liquid crystal display modulator 20 (Sonehara, Fig. 29 and Col. 18, lines 16-28 and Parker, Fig. 9 and Col. 8, lines 13-23) so that light transmitted by each optical fiber has substantially the same intensity (Sonehara, Col. 9, lines 8-20 teaches prevention of non-uniformity of illumination. Parker, Col. 7, line 47-Col. 8, line 56 teaches calibrating the intensity of light for the fiber bundles), and wherein the second end of a given optical fiber of the pre-selected number of optical fibers is optically coupled to a different pixel than to which the second ends of the rest of the pre-selected number of optical fibers are optically coupled (Sonehara, Fig. 29 and Col. 18, lines 16-28 and Parker, Fig. 9 and Col. 8, lines 13-23 teach multiple optical fibers connected to a pre-selected color region are coupled to different pixels).

With respect to Claim 5, Sonehara in view of Parker and further in view of Nixon teaches the tiled optical display according to Claim 1, discussed above. However, Sonehara in view of Parker and further in view of Nixon fails to expressly teach wherein each light emitting diode is positioned sufficiently close to the liquid crystal display modulator so that the light beams from each light emitting diode do not mix with the light beams from any other light emitting diode on the pre-selected areas of the liquid crystal display modulator 20 (emphasis added).

Examiner takes official notice that positioning an LED backlight sufficiently close to an LCD modulator to obtain properly focused beams of light is well known in the art (Examiner notes it may even be inherent when using a single backlight array with different colors). It would have been obvious for one of ordinary skill in the art to position the LEDs sufficiently close to the LCD so that light beams did not mix. Furthermore, one of ordinary skill in the art would have recognized that positioning the LEDs sufficiently close to the LCD would have yielded predictable results and resulted in an improved system. Examiner further notes this would maintain color purity of the individually colored LED backlights.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTONIO XAVIER whose telephone number is 571-270-7688. The examiner can normally be reached on M-F 6:30am-12:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571-272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. X./
Examiner, Art Unit 2629

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629